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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/731,335	12/06/2000	Dale Thayer	MBHB00-150	8751

7590

01/15/2002

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EXAMINER

HO, ALLEN C

ART UNIT

PAPER NUMBER

2882

DATE MAILED: 01/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/731,335

Applicant(s)

THAYER, DALE

Examiner

Allen C. Ho

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 and 20-34 is/are rejected.
- 7) ☒ Claim(s) 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claims 1-4, 10, 11, 13, 15-18, 21-25, 31, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Kirchner *et al.* (U. S. Patent No. 6,028,910).

Kirchner *et al.* disclosed an apparatus for acquiring off-axis x-ray images of a plurality of regions of interest (A, B, C, D, E, Q), comprising: a non-steerable x-ray source (10), the source producing a beam of x-ray; a surface (16) to support at least a subset of the plurality of regions of interest; and an x-ray detector (14) located to simultaneously receive portions of the beam that have passed through the subset of the plurality of regions of interest, the x-ray detector producing from the received portions of the beam an electronic representation of an image for each region of interest in the subset of the plurality of regions of interest, wherein the electronic representations of a region of interest are transferred from the detector to a processor (26) for processing into images of the region of interest, the resulting images can be viewed on a display

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(44); wherein at least one of the sources, the surface, and the detector may be moveable to position the regions of interest within the beam. The apparatus further comprises an encoder (20) associated with the support for adjusting the location of the plurality of regions of interest.

3. Claims 16-18 and 21-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker *et al.* (U. S. Patent No. 4,926,452).

Baker *et al.* disclosed an apparatus for acquiring off-axis x-ray images of a plurality of regions of interest, comprising: a non-steerable source (20) of radiation that produces a beam; an x-y table (230) coupled to an encoder (265) to support at least a subset of the plurality of regions of interest; an x-ray detector (30) located to receive portions of the beam that pass through the subset and to simultaneously produce an electronic representation of an image for each region of interest in the subset; wherein at least one of the source, the surface, and the detector may be moveable to position the regions of interest within the beam.

4. Claims 26-28 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Baker *et al.* (U. S. Patent No. 4,926,452).

Baker *et al.* disclosed an apparatus for acquiring off-axis x-ray images of test objects comprising: an x-ray source (Fig. 4) for producing a steerable electron beam from a number of different positions along a horizontal path perpendicular to a vertical axis, each position being at an angle from the vertical axis; a high-resolution detector (240) positioned to receive x-rays that are transmitted through at least two regions of interest for the test object from each of the positions and to produce electronic representations of acquired off-axis images corresponding to the regions of interest.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirchner *et al.* (U. S. Patent No. 6,028,910) as applied to claim 1 above, and further in view of Niklason *et al.* (U. S. Patent No. 5,872,828).

Kirchner *et al.* disclosed an apparatus for acquiring off-axis x-ray images of a plurality of regions of interest comprising an x-ray source and an x-ray detector. However, Kirchner *et al.* did not teach that the detector comprises an amorphous silicon screen with a coating of cesium iodide. Niklason *et al.* disclosed a detector array comprising cesium iodide phosphor on an amorphous silicon transistor/photodiode array (column 7, lines 1-6). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ such a detector, since it offers improved spatial resolution and shortened readout time.

7. Claims 7-9, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirchner *et al.* (U. S. Patent No. 6,028,910) as applied to claims 1 and 26 above, and further in view of Elabd (U. S. Patent No. 5,760,403).

Kirchner *et al.* disclosed an apparatus and a method for acquiring off-axis x-ray images of a plurality of regions of interest comprising an x-ray source and an x-ray detector. However, Kirchner *et al.* did not teach that the detector comprises a cesium iodide screen coupled to a CCD with a lens or fiber optic bundle. Elabd disclosed a detector comprising a scintillation layer (12)

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of cesium iodide screen (column 4, lines 20-22) coupled to a CCD (16) with a fiber optic bundle (15). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ a detector comprising a cesium iodide screen coupled to a CCD with a fiber optic bundle, since a person would be motivated to increase the spatial resolution of a detector.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirchner *et al.* (U. S. Patent No. 6,028,910) as applied to claim 1 above.

Kirchner *et al.* disclosed an apparatus for acquiring off-axis x-ray images of a plurality of regions of interest comprising an x-ray source and an x-ray detector. However, Kirchner *et al.* did not teach that the source and the detector may be moveable to position the regions of interest within the beam. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to move the detector and the source in order to position the regions of interest, since a person would be motivated to move the detector and the source when the object is too delicate to be moved.

9. Claims 14 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirchner *et al.* (U. S. Patent No. 6,028,910) as applied to claims 13 and 31 above, and further in view of Forehand *et al.* (U. S. Patent No. 5,710,063).

Kirchner *et al.* disclosed a method for acquiring off-axis x-ray images of a plurality of regions of interest. However, Kirchner *et al.* did not teach aligning the image data for each region by locating one or more in-view fiducials in each region of interest. Forehand *et al.* taught locating elements on a printed circuit board comprising one or more fiducials. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide

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fiducials in each region of interest, since a person would be motivated to provide a known position locator to calibrate the positions of regions of interest.

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kirchner *et al.* (U. S. Patent No. 6,028,910) as applied to claim 16 above, and further in view of Lin *et al.* (U. S. Patent No. 6,222,902).

Kirchner *et al.* disclosed an apparatus for acquiring off-axis x-ray images of a plurality of regions of interest comprising an x-ray source and an x-ray detector. However, Kirchner *et al.* did not teach that at least one of the source and the detector is movable along the z-axis. Line *et al.* disclosed a tomographic system comprising a flat panel detector that is movable along the z-axis. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to employ an x-ray detector that is movable along the z-axis, since a person would be motivated to examine a selected layer in the object by altering the field of view.

Allowable Subject Matter

11. Claim 19 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

The allowable subject matter in claim 19 refers to the apparatus of claim 18 wherein the positional accuracy of the table is better than about ± 2 pixels.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- (1) Fazzio (U. S. Patent No. 6,324,249) describes an electronic planar laminography system and method.
- (2) Adams (U. S. Patent No. 5,583,904) describes a continuous linear scan laminography system and method.
- (3) Peugeot (U. S. Patent No. 4,688,241) describes a microfocus x-ray system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen C. Ho whose telephone number is (703) 308-6189. The examiner can normally be reached on Monday - Friday from 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached at (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

Allen C. Ho
Examiner
Art Unit 2882

ACH
December 19, 2001


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